

REMARKS/ARGUMENTS

In light of the amendments to the claims presented herein and the following remarks, reexamination and reconsideration of this application, withdrawal of the rejections, and formal notification of the allowability of all claims as presented are earnestly solicited. As detailed in the Office Action mailed September 20, 2007, Claims 1-28 are pending, wherein Claims 1-13 and 17-28 have been rejected and Claims 14-16 have been objected to, but indicated as being allowable if rewritten in independent form. In response to the Office Action, Claims 1, 19, and 28 have been amended, without adding any new matter. The Applicants thus submit that the claims now define patentable subject matter over the prior art cited in the Office Action. Accordingly, notice to such effect is requested at the Examiner's earliest convenience.

Claim Rejections – 35 U.S.C. §112

Claim 28 was rejected in the Office Action as being indefinite. In response, the Applicants have amended Claim 28 to properly depend upon Claim 19, as suggested in the Office Action. As such, the Applicants request withdrawal of this rejection.

Claim Rejections – 35 U.S.C. §103

As far as understood by the Applicants, Claims 1-13 and 17-28 were rejected in the Office Action as being unpatentable U.S. Patent No. **5,467,931** to Dodd (*the substantive rejection in the Office Action does not specify which particular Dodd patent is cited*), particularly FIG. 7 thereof. In response, Claims 1 and 19 have been amended, as follows:

1. A refining surface of a refining member adapted for use with a refiner for defibrating a lignocellulose-containing material, the refiner comprising at least two adjacently-disposed refining members arranged coaxially relative to each other along an axis, wherein at least one of the refining members is configured to rotate in a rotational direction about a shaft arranged along the axis, and the at least two refining members are configured to receive the lignocellulose-containing material in a refining gap therebetween, the refining gap defining a

refining plane, such that the material is defibrated by the respective refining surface of each refining member within the refining gap, the refining surface of the refining member parallel to the refining plane comprising:

a plurality of first grooves, ~~each first groove being defined between two adjacent first bar portions of the refining surface, and defining first grooves between adjacent first bar portions, each first groove having a bottom surface, each first bar portion extending between opposing first and second radial edges of the refining surface and having a leading surface, an opposed trailing surface, each with respect to the rotational direction, and an upper surface, each of the leading and trailing surfaces being configured to extend away from the bottom surfaces of the respective first grooves such that the upper surface of each first bar portion is substantially planar and parallel to the refining plane;~~ and

the upper surface of each first bar portion having a plurality of second grooves, each second groove being defined between two adjacent second bar portions defining second grooves between adjacent second bar portions, of the refining surface forming each first bar portion, and each second bar portion extending between two adjacent first grooves, the first bar portions being wider than the second bar portions, and each second bar portion being between about 1 mm and about 3 mm wide.

19. A blade segment of a refining member adapted for use with a refiner for defibrating a lignocellulose-containing material, the refiner comprising at least two adjacently-disposed refining members arranged coaxially relative to each other along an axis, wherein at least one of the refining members is configured to rotate in a rotational direction about a shaft arranged along the axis, and the at least two refining members are configured to receive and defibrate the lignocellulose-containing material in a refining gap therebetween, the refining gap defining a refining plane, the blade segment forming at least a portion of the refining member parallel to the refining plane and comprising:

a refining surface having a plurality of first bar portions defining ~~a plurality of first~~

grooves between adjacent first bar portions, each first groove having a bottom surface, each being defined between two adjacent first bar portions of the refining surface, and portion extending between opposing first and second radial edges of the refining surface and having a leading surface, an opposed trailing surface, each with respect to the rotational direction, and an upper surface, each of the leading and trailing surfaces being configured to extend away from the bottom surfaces of the respective first grooves such that the upper surface of each first bar portion is substantially planar and parallel to the refining plane;
the upper surface of each first bar portion having a plurality of second bar portions the refining surface further defining a plurality of second grooves between adjacent second bar portions, each second groove being defined between two adjacent second bar portions of the refining surface forming each first bar portion, and extending between two adjacent first grooves, the first bar portions being wider than the second bar portions, and each second bar portion being between about 1 mm and about 3 mm wide.

As amended, Claims 1 and 19 recite that a refining gap between at least two adjacently-disposed refining members, with at least one of the refining members being configured to rotate, defines a refining plane, wherein a refining surface of one of the refining members is parallel to the refining plane and comprises a plurality of first bar portions defining first grooves between adjacent first bar portions. Each first groove has a bottom surface, and each first bar portion extends between opposing first and second radial edges of the refining surface so as to have a leading surface and an opposed trailing surface, each with respect to the rotational direction, and an upper surface. Each of the leading and trailing surfaces is configured to extend away from the bottom surfaces of the respective first grooves such that the upper surface of each first bar portion is substantially planar and parallel to the refining plane. The upper surface of each first bar portion has a plurality of second bar portions defining second grooves between adjacent second bar portions. Support for such amendments can be found throughout the Specification and the Figures such as, for example, in paragraph [0027], and FIGS. 1 and 2 (i.e., a refining

plane) and FIGS. 3-7 (i.e., the upper surface of each first bar portion being substantially planar and parallel to the refining plane). As such, no new matter has been added.

In contrast, the Applicants note that the Dodd '931 patent was particularly examined in the Background section of the present application as being within the known art. The characterization of the Dodd patent is as follows:

“US 5 467 931 discloses a refining surface, wherein the efficiency of a refiner with densely arranged bars has increased due to a higher flow capacity of the refiner blades. Flow capacity has increased primarily because *material has been chamfered away from the background edges of the blade bars*. The publication also discloses a blade bar, the upper surface of which is provided with small grooves at sparse intervals, which can slightly increase the flow capacity of the grooves between the bars and facilitate the discharge of steam produced during refining from between the refining surfaces. Said grooves on the upper surface of the blade bar also add to the combined cutting length of the bars of the refining surface to some extent, but, in practice, *the oblique structure of the upper surface of the blade bar hinders these small grooves from participating in the refining of the material before the blade bar has worn significantly*, which means that one has not, nevertheless, succeeded in substantially increasing the refining capacity of the refiner.”

This configuration is particularly shown and disclosed by the Dodd '931 patent, particularly with respect to FIG. 7 thereof.

Embodiments of the present invention thus particularly recognize that the limitations of the chamfered background edges of the blade bars of the Dodd '931 patent are overcome by the “flat” or “parallel to the refining plane” configuration of the bars disclosed in the present application. In this regard, Claims 1 and 19 have been amended to clarify that each of the leading and trailing surfaces is configured to extend away from the bottom surfaces of the respective first grooves such that *the upper surface of each first bar portion is substantially*

planar and parallel to the refining plane. The Summary section of the present application further notes that a benefit of the “flat” bar configuration is that it allows:

“ . . . a high cutting length [to] be achieved on the refining surface. Since the first grooves have a volume that is larger than previously, an optimal, steady feed of the fibrous material to be refined can be achieved over the entire area of the refining surface. The refining surface of the solution can thus provide both the desired capacity and a good quality of the refined pulp. Unlike before, the same refining surface solution can also be applied to the refining of both long and short fibers.”

The Applicants submit that the Dodd ‘931 patent **does not** teach or suggest that **each of the leading and trailing surfaces is configured to extend away from the bottom surfaces of the respective first grooves such that the upper surface of each first bar portion is substantially planar and parallel to the refining plane**, wherein the benefits of such a configuration are particularly recognized by the present application. The Applicants further submit that one of ordinary skill in the art **would not** have recognized the configurations now claimed in amended Claims 1 and 19 as merely design choices, since the Dodd ‘931 patent **does not** disclose any variations, or any principles related thereto, that would lead one away from the oblique or chamfered blade bars disclosed therein. Thus, since the elements of amended Claims 1 and 19 are **not** taught or suggested by the Dodd ‘931 patent, one of ordinary skill in the art **would not** have recognized from the disclosure of the cited reference that the apparatuses now claimed in Claims 1 and 19 were predictable. As such, the Applicants submit that amended Claims 1 and 19, as well as Claims 2-18 and 20-28 which depend therefrom, are allowable over the Dodd ‘931 patent and are believed to be in condition for immediate allowance.

Conclusion

In summary, embodiments of the present invention now claimed in amended Claims 1 and 19 **would not** have been predictable to one of ordinary skill in the art when presented with

the disclosure of the Dodd '931 patent. Accordingly, in view of these differences between the embodiments of the Applicants' invention and the Dodd '931 patent, it is submitted that the present invention, as defined by the pending claims, is patentable over the prior art cited in the Office Action. As such, Claims 1-28 are believed to be in condition for immediate allowance.

In conclusion, for the reasons set forth above, the Applicants submit that all claims now pending are in condition for immediate allowance. Accordingly, notice to such effect is respectfully requested at the Examiner's earliest opportunity.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

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